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Molecular identification of *Echinococcus granulosus* sensu lato by mitochondrial *COX1* and *SSU-rDNA* markers in dogs in the west of Iran

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ABSTRACT

Echinococcus granulosus sensu lato (*E. granulosus* s. l.) is important in terms of the medical and veterinary sciences, especially in the tropical and subtropical regions. Stray and domestic dogs are the most important definitive hosts for this parasite. The aim of this study was to determine the prevalence of *E. granulosus s.* l. among stray and domestic dogs using copro-nested PCR method in the west of Iran. Accordingly, 605 faecal samples of domestic (n = 424) and stray (n = 181) dogs were collected from Kermanshah (n = 301) and Lorestan (n = 304) Provinces, in the west of Iran. Initially, the samples were concentrated using formalin-ether method and the precipitates were collected for further examination using copro-PCR method using *COX1* and *SSU-rDNA* markers in order to detect taeniid parasites and *E. granulosus* s. l., respectively. Totally, taeniid parasites were observed in 38 (6.28%) samples, of which 21 (3.47%) samples in domestic dogs and 17 (2.8%) samples in stray dogs were detected. Moreover, of 38 taeniid positive samples, 21 (3.47%) samples were positive for *E. granulosus* s. l that 13 (2.14%) samples in domestic dogs and 8 (1.32%) samples in stray dogs were detected. In conclusion, the findings of the current study specified that the overall prevalence of echinococcosis was low (3.47%) in domestic and stray dogs in the examined areas. Since western Iran is one of the areas with high potential for transmission of *E. granulosus* s. l., regular monitoring of the prevalence of this disease in both the final hosts and the intermediate hosts is important at regular intervals.

1. Introduction

Echinococcosis is a worldwide zoonotic parasitic disease caused by the genus *Echinococcus* (*E.*) spp. The four major species of *Echinococcus* include *E. granulosus* sensu lato (s. l.) (the causative agent of cystic echinococcosis, so-called hydatid disease or hydatidosis), *E. multilocularis* (the causative agent of alveolar echinococcosis), *E. vogeli* (the causative agent of polycystic echinococcosis), and *E. oligarthra* (the causative agent of unicystic echinococcosis) (D'Alessandro and Rausch, 2008). *E. granulosus* sensu lato is subdivided into five species, including *Echinococcus granulosus* sensu stricto (G1-G3 genotypes), *E. equinus* (G4 genotype), *Echinococcus ortleppi* (G5 genotype), *Echinococcus canadensis*

Abbreviations: E. granulosus, *Echinococcus granulosus*; ELISA, the enzyme-linked immunosorbent assay; PCR, polymerase chain reaction; EDTA, ethylene diamine tetra acetic

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